

AMENDMENT(S) TO THE CLAIMS

1-23 (cancelled)

24. (currently amended) A method of adding layers to a paper web, comprising the steps of:

applying at least one first layer of a first application medium to a paper web;

applying at least one second layer of a second application medium to said paper web, each of said first application medium and said second application medium being one of a liquid medium and a pasty medium, at least one of said first application medium and said second application medium having a solids content in an approximate range of 2% by weight to 70% by weight, at least one of said first application medium and said second application medium having a Brookfield viscosity determined at 100 rev/min of between about 10 mPas and about 2000 mPas, said first application medium flowing to said paper web in the form of a first curtain, said second application medium flowing to said paper web in the form of a second curtain;

forming a pressure differential in a space partially bounded by said first curtain and said second curtain, said pressure differential being relative to an ambient atmospheric pressure, wherein said applying at least one first layer step and said applying at least one second layer step are carried out by an apparatus, said apparatus including:

a first curtain applicator unit including a first discharge nozzle, said first curtain applicator unit discharging the first application medium through said first discharge nozzle in a form of said first curtain onto a paper web, said first curtain moving substantially under the force of gravity; and

a second curtain applicator unit including a second discharge nozzle, said second curtain applicator unit discharging said second application medium through said second discharge nozzle in a form of said second curtain onto said paper web, said second curtain moving substantially under the force of gravity, said first applicator unit being positioned relative to said second applicator unit such that a spacing of about 100 mm to about 500 mm separates said first curtain and said second curtain, said first application medium is applied by said first curtain applicator unit that is configured for applying an amount of said first application medium applied to said paper web, said amount being between about 2 ml/m² and about 20 ml/m², said second application medium is applied to said paper web at between about 5 ml/m² and about 30 ml/m²:

enclosing said space partially bounded by said first curtain and said second curtain using said first curtain applicator unit, said second curtain applicator unit, the application medium curtains coming from said first curtain applicator unit and said second curtain applicator unit, the paper web and a suction/blower box;

positioning a first guideblade immediately adjacent to said first discharge nozzle;

positioning a second guideblade immediately adjacent to said second discharge nozzle;

setting a doctor element against a surface of the paper web, said doctor element intercepting said first curtain, said doctor element leading said first curtain to the paper web; and

enhancing the wetting of the curtain medium from said second curtain to the medium from said first curtain on the web by providing a negative pressure in said space.

25. (previously presented) The method of claim 24, wherein said first application medium has a first water retention capacity, said second application medium having a second water retention capacity, said first water retention capacity being lower than said second water retention capacity.

26. (previously presented) The method of claim 24, wherein said first application medium has a first density, said second application medium having a second density, said first density being at least about 10% greater than said second density.

27. (previously presented) The method of claim 24, wherein said first application medium has a first viscosity, said second application medium having a second viscosity, said first viscosity being greater than said second viscosity.

28. (previously presented) The method of claim 24, wherein at least one of said first application medium and said second application medium is one of an aqueous solution and an aqueous dispersion of solid particles.

29. (previously presented) The method of claim 28, wherein said at least one of said first application medium and said second application medium is one of an acrylate dispersion and a butadiene-styrene dispersion.

30. (previously presented) The method of claim 28, wherein said solid particles are one of mineral pigments and microscopic plastic particles.

31. (previously presented) The method of claim 28, wherein said solid particles are one of plastic pigments, ink-filled microcapsules and starch.

32. (previously presented) The method of claim 24, wherein said first application medium is used for forming a barrier layer, said first application medium having at least one of said following properties:

a solids content in an approximate range of 2% by weight to 30% by weight;
a Brookfield viscosity determined at 100 rev/min of between about 10 mPas and about 150 mPas; and
a density of between about 0.8 g/cm³ and about 1.1 g/cm³.

33. (previously presented) The method of claim 24, wherein said first application medium is a starch solution.

34. (cancelled)

35. (previously presented) The method of claim 24, wherein said second application medium is a dispersion of ink-filled microcapsules, each of said microcapsules having a microcapsule diameter associated therewith, said second application medium having at least one of said following properties:

each of said microcapsules having a microcapsule diameter of between about 5 μm and about 12 μm;

a solids content of between about 20% by weight and about 50% by weight; and

a Brookfield viscosity determined at 100 rev/min of between about 100 mPas and about 400 mPas.

36 - 37. (cancelled)

38. (previously presented) The method of claim 24, wherein at least one of said first curtain applicator unit and said second curtain applicator unit applies said first application

medium and said second application medium, respectively, to said paper web in a substantially finally metered manner.

39. (previously presented) The method of claim 24, further comprising the step of producing one of a vacuum and a positive pressure with a pressure-differential device, said pressure-differential device being operatively positioned between said first curtain applicator unit and said second curtain applicator unit.

40. (previously presented) The method of claim 24, wherein each of said first curtain and said second curtain has a curtain flow path and a curtain width associated therewith, said apparatus further comprising at least one guide element, each said guide element being arranged within said curtain flow path of one of said first curtain and said second curtain, each said guide element guiding one of said first curtain and said second curtain along at least a part of said curtain flow path and substantially over said curtain width associated therewith.

41. (previously presented) The method of claim 24, wherein each of said first curtain and said second curtain has a curtain height of between about 40 mm and about 400 mm.

42. (previously presented) The method of claim 24, wherein said first curtain applicator unit and said second curtain applicator unit discharge said first application medium and said second application medium, respectively, onto said paper web at a rate of between about 4 l/min and about 100 l/min per meter of working width.

43. (previously presented) The method of claim 24, wherein said paper web ~~is one of~~ includes paper and cardboard, said paper web having a base running speed associated therewith,

said base running speed being up to 3000 m/min for coating of said paper, said base running speed being at least 200 m/min for coating of said cardboard.

44. (previously presented) The method of claim 43, wherein said first curtain applicator unit and said second curtain applicator unit together produce a grammage of coated paper web of between about 30 g/m² and about 150 g/m² for coating of said paper web and between about 150 g/m² and 1000 g/m² for coating of said cardboard.

45. (cancelled)

46. (currently amended) A method of adding layers to a paper web, comprising the steps of:

applying at least one first layer of a first application medium to a paper web;

applying at least one second layer of a second application medium to said paper web, each of said first application medium and said second application medium being one of a liquid medium and a pasty medium, at least one of said first application medium and said second application medium having a solids content in an approximate range of 2% by weight to 70% by weight, at least one of said first application medium and said second application medium having a Brookfield viscosity determined at 100 rev/min of between about 10 mPas and about 2000 mPas, said first application medium flowing to said paper web in the form of a first curtain, said second application medium flowing to said paper web in the form of a second curtain;

forming a pressure differential in a space partially bounded by said first curtain and said second curtain, said pressure differential being relative to an ambient atmospheric pressure, wherein said applying at least one first layer step and said applying at least one second layer step are carried out by an apparatus, said apparatus including:

a first curtain applicator unit including a first discharge nozzle, said first curtain applicator unit discharging the first application medium through said first discharge nozzle in a form of said first curtain onto a paper web, said first curtain moving substantially under the force of gravity; and

a second curtain applicator unit including a second discharge nozzle, said second curtain applicator unit discharging said second application medium through said second discharge nozzle in a form of said second curtain onto said paper web, said second curtain moving substantially under the force of gravity, said first applicator unit being positioned relative to said second applicator unit such that a spacing of about 100 mm to about 500 mm separates said first curtain and said second curtain, said first application medium is applied by said first curtain applicator unit that is configured for applying an amount of said first application medium applied to said paper web, said amount being between about 2 ml/m² and about 20 ml/m², said second application medium is applied to said paper web at between about 5 ml/m² and about 30 ml/m²;

enclosing said space partially bounded by said first curtain and said second curtain using said first curtain applicator unit, said second curtain applicator unit, the application medium curtains coming from said first curtain applicator unit and said second curtain applicator unit, the paper web and a suction/blower box;

positioning a first guideblade immediately adjacent to said first discharge nozzle;

positioning a second guideblade immediately adjacent to said second discharge nozzle;

setting a doctor element against a surface of the paper web, said doctor element intercepting said first curtain, said doctor element leading said first curtain to the paper web; and

stabilizing said first curtain and said second curtain by applying a positive pressure in said space.